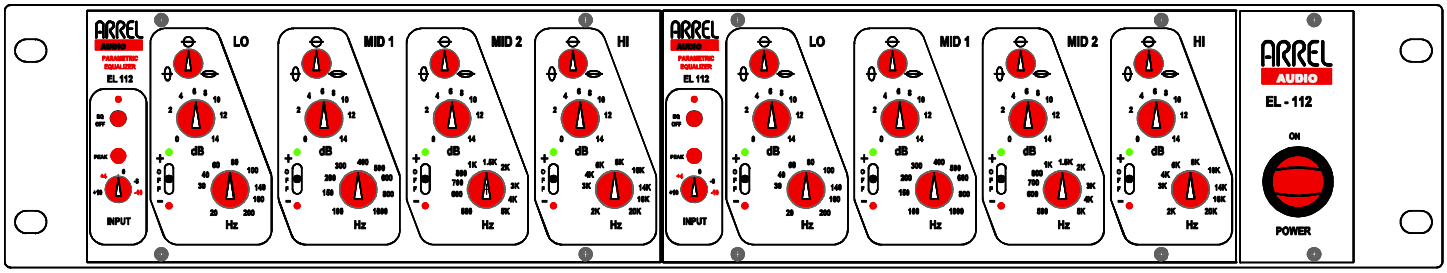
ARREL AUDIO

REAL Innovation

EL–112
Four Band Parametric Equalizer



User Manual

Issue 0.3

SAFETY INSTRUCTIONS

⚠ *WARNING*

Always follow the precautions listed below to avoid any possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not expose the instrument to liquids and rain. Do not use it near water or in damp or wet conditions, or place containers on it containing liquids. If any liquid seeps turn off the power and unplug the power cord from the AC outlet.
- Do not put burning items, such as candles, on the unit. A burning item may fall over and cause a fire.
- This instrument contains no user-serviceable parts. Do not open the instrument or attempt to disassemble or modify the internal circuit.
- Never insert or remove an electric plug with wet hands.
- Check the electric plug periodically and remove any dirt or dust which may have accumulated on it.
- Do not place the power cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.

⚠ *CAUTION*

Always follow the precautions listed below to avoid any possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not connect the instrument to an electrical outlet using a multiple-connector. Doing so can result in lower sound quality, or possibly cause overheating in the outlet itself.
- When removing the electric plug from the instrument or an outlet, hold the plug itself and not the cord. Pulling by the cord can damage it.
- Remove the electric plug from the outlet when the instrument is not to be used for extended periods of time, or during electrical storms.
- Do not place the instrument in an unstable position where it might accidentally fall over.
- Before moving the instrument, remove all connected cables.
- When setting up the product, make sure that the AC outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switch and disconnect the plug from the outlet. Even when the power switch is turned off, electricity is still flowing to the product at the minimum level.
- When you are not using the product for a long time, make sure to unplug the power cord from the wall AC outlet.
- Use only the stand/rack specified for the instrument. When attaching the stand or rack, use the provided screws only. Failure to do so could cause damage to the internal components or result in the instrument falling over.

Information for Users on Collection and Disposal of Old Equipment

This special symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.
For proper treatment, recovery and recycling of old products, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC.
By disposing of these products correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.
For more information about collection and recycling of old products, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.
[For business users in the European Union]
If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.
[Information on Disposal in other Countries outside the European Union]
This symbol is only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

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ARREL Audio is continuously working to the improvement of its systems and related documentation.
In any case, we reserve the right to change the specifications without notice but in respect to the current legislation.

Disclaimer:
The information contained in this manual has been carefully checked and we believed is accurate at the time of publication.
In any case, we do not assume any responsibility for inaccuracies, errors or omissions nor any liability for any loss or damage resulting either directly or indirectly from use of the information
contained in this manual.

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INTRODUCTION

The **ARREL Audio EL-112** is an advanced 2-channel four bands equalizer developed to meet the demands of professional recording and mastering engineers.
The **EL-112** features 4 parametric bands. Special analog design techniques have been used for precise control of the sound structure down to the minimum details.
The **EL-112** is based on Livio Agentini' s patented single-stage parallel filters. This innovative phase coherent EQ design offers the lowest distortion/noise specifications, not available on similar units on the market.
The **EL-112** input section provides a continuous input level control in the -10/+10 dB range. A peak level detector circuit indicates when the output level is -6 dB with respect to the saturation level. The equalizer can be excluded by a true-bypass button.
The filtering section has 4 bands, LO, MID1, MID2, HI. For each band three rotary knobs controls the central frequency, the gain and the Q.
The Emphasis/De-Emphasis is assisted by a three position switch (+ = Emphasis, off, - = De-Emphasis). In this way the full 300 degrees range of the potentiometer is available for the emphasis/de-emphasis allowing a very accurate control of the equalization in the range 0/14 dB. The Q is controlled by a potentiometer.
To obtain an outstanding audio quality, no servo amplifiers are used in the **EL-112** so

IT IS NOT POSSIBLE TO UNBALANCE THE LINE OUT OF THE EL-112.

If you need an unbalanced connection for the line out there is a bal/unbal switch on the back panel of the EL-112 (follow the instructions in APPENDIX A).

The **EL-112** is composed by a 2U rack module equipped with the power supply and two equalizer modules. Each module is completely independent and can be inspected separately; four screws are used to fix the modules. A chassis of the Classic Series can be configured with different modules of the Classic Series (for example a unit composed by a mic-preamplifier and a single equalizer to implement an advanced channel strip).

The **EL-112** is an innovative and flexible equalizer, ready to take its place in any high profile recording, mastering broadcast and live activities

ARREL Audio products are designed and manufactured in Italy.

Housing and Rack Mounting

The EL-112 has been designed to be compliant with a 2U rack. No specific air conditioning is required for the racks, provided that there is a free flow of air through the rack from front to back and the temperature is maintained in the operating range. Consequently the racks may be stacked.

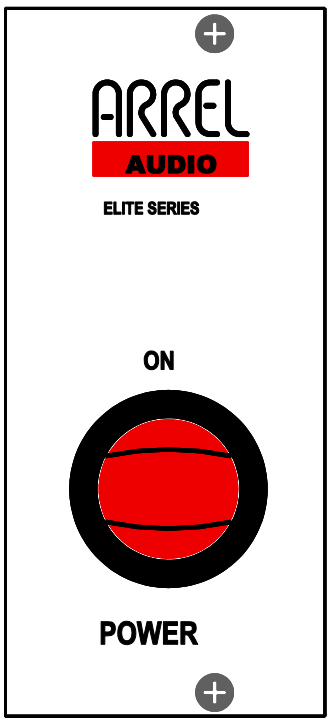

Fig. 1 Power Supply switch

EL-112 Front Panel Controls and Operations

POWER SUPPLY SWITCH

The EL-112 power-on switch is located in the right part of the front panel. The power on state is indicated by the illumination of the switch (Fig. 1).

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INPUT SECTION: GAIN CONTROL

The input section gain control knob is located in the INPUT section of each channel. A continuous level control in the -10/+10 dB range is obtained by rotating the corresponding knob (Fig. 2).

INPUT SECTION: BY-PASS SWITCH

The equalizer can be excluded by a true-bypass button (red LED indicator). Push the button to by-pass the equalizer (red LED on). Push again to insert the equalizer (red LED off) (Fig. 2).

INPUT SECTION: PEAK INDICATOR

A peak level detector (red LED on) circuit indicates when the output level is -6 dB with respect to the saturation level (Fig. 2). The red LED on do not means saturation but must be interpreted as a warning indicating you reaching the saturation level.

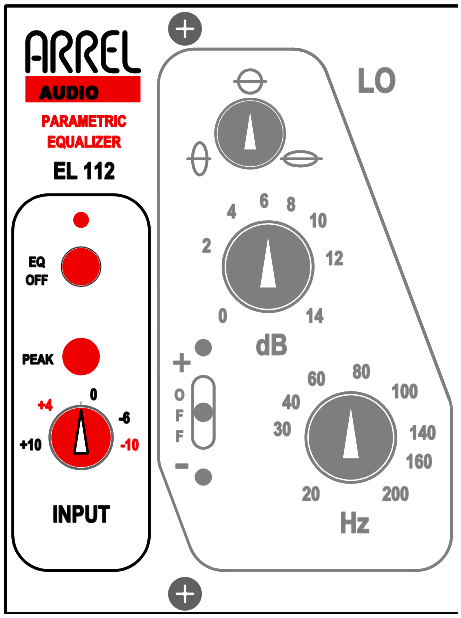

Fig. 2 Input Section Controls

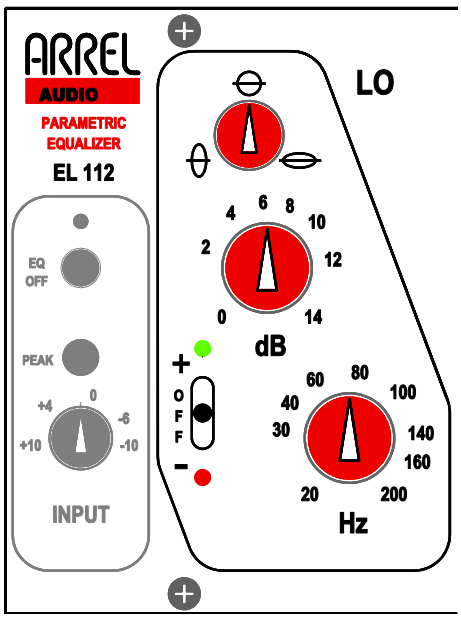

Fig. 3 Equalizer Section Controls

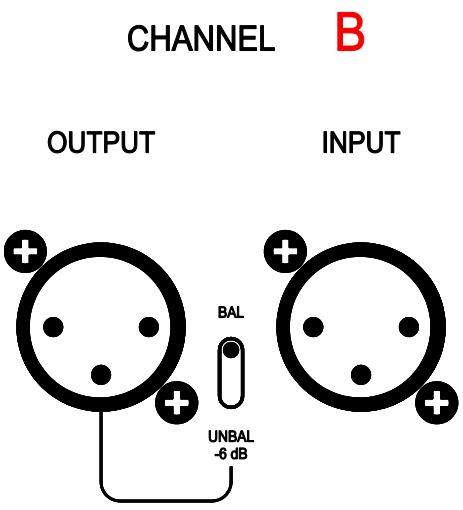

Fig. 4 Bal/Unbal switch

EQ SECTION: GENERAL

Each control described in the EQ section is applicable to the four bands (LO, MID1, MID2, HI) of each channel of the stereo equalizer.

EQ SECTION: Q CONTROL KNOB

Turn the Q knob in order to select the required Q value (Fig. 3).

EQ SECTION: GAIN CONTROL KNOB AND SWITCH

Emphasis: the switch must be positioned in the + position (green LED ON). In this position the full 300 degrees range of the potentiometer is available to select the emphasis gain allowing a very accurate control of the equalization in the range 0/+14 dB (Fig. 3).

De-emphasis: the switch must be positioned in the – position (red LED ON). In this position the full 300 degrees range of the potentiometer is available to select the de-emphasis gain allowing a very accurate control of the equalization in the range 0/14 dB (Fig. 3).

Off: the switch must be positioned in the off position (LED off). In this position the potentiometer is excluded (Fig. 3).

EQ SECTION: CENTRAL FREQUENCY

Turn the frequency knob in order to select the required central frequency value (Fig. 3).

EL-112 Back Panel Controls and operations

On the back panel of the EL-112 the XLR input and output connectors are located.
Moreover each output is equipped with a Bal/Unbal switch (Fig. 4).

APPENDIX A: External connections

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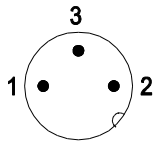
WIRING EL - 112

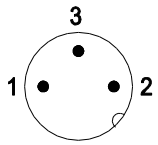
LINE INPUT XLR On the back



1 = Ground
2 = PHASE +
3 = PHASE -

Balanced line - It can be unbalanced

MAIN OUTPUT XLR On the back



1 = Ground
2 = PHASE +
3 = PHASE -

Balanced line only - Use the switch to connect unbalanced cables

FIG. 5 EL-112 external connections

APPENDIX B: Half Front Panel

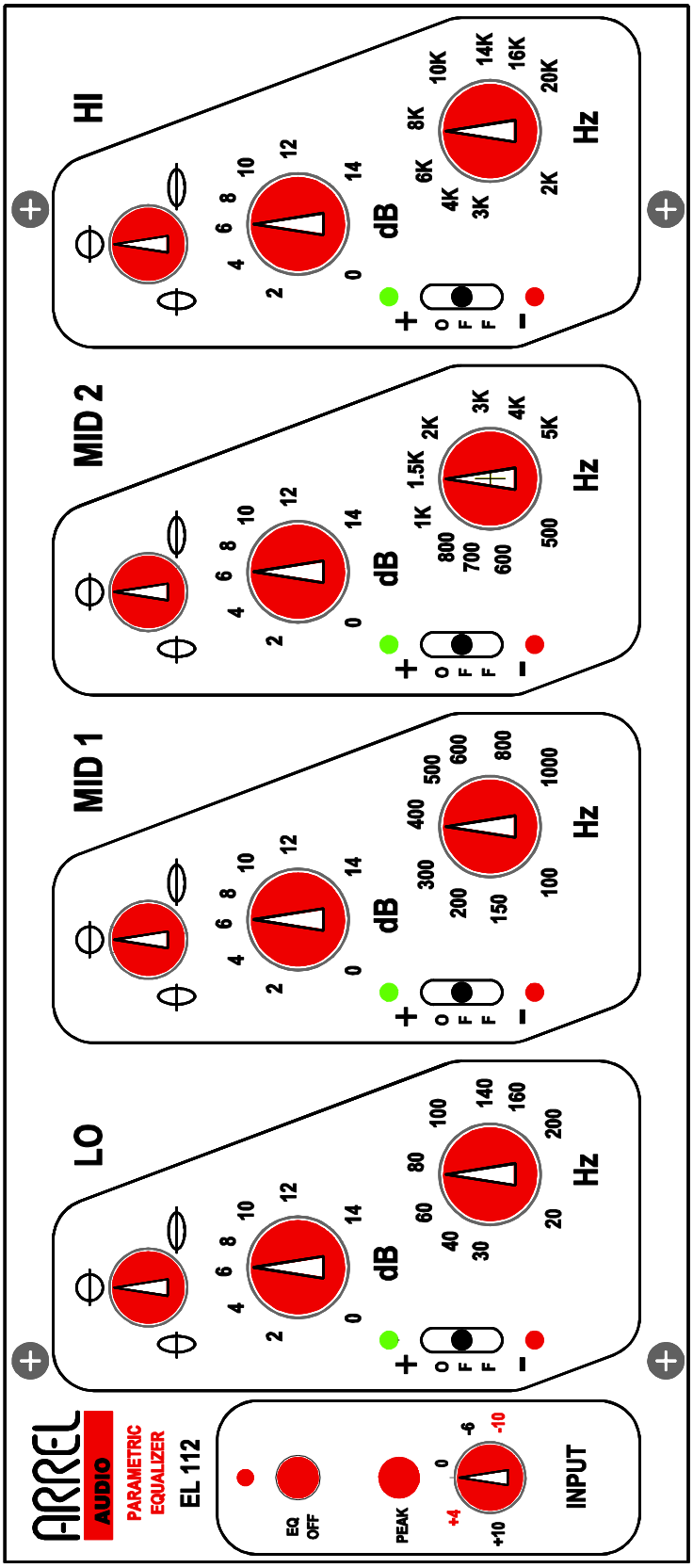


FIG. 6 EL-112 half front Panel

APPENDIX B: Front Panel

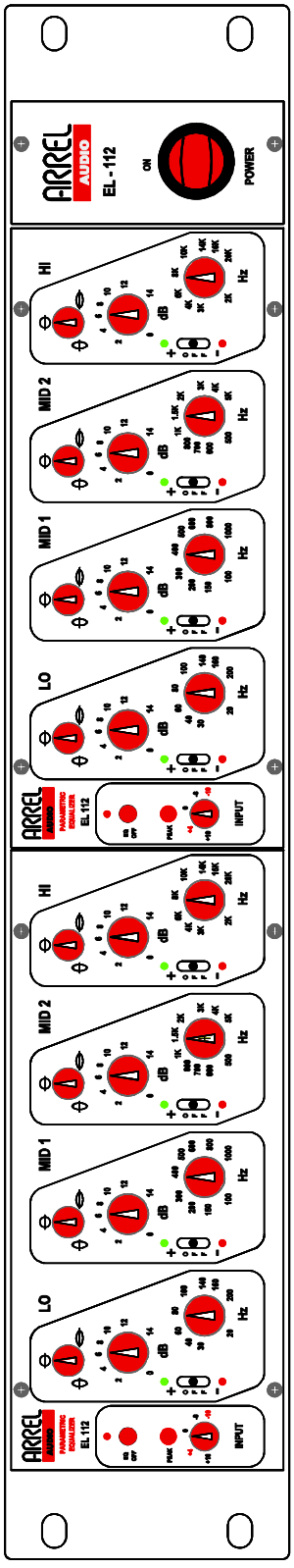


FIG.7 EL-112 half front Panel

APPENDIX D: Back Panel

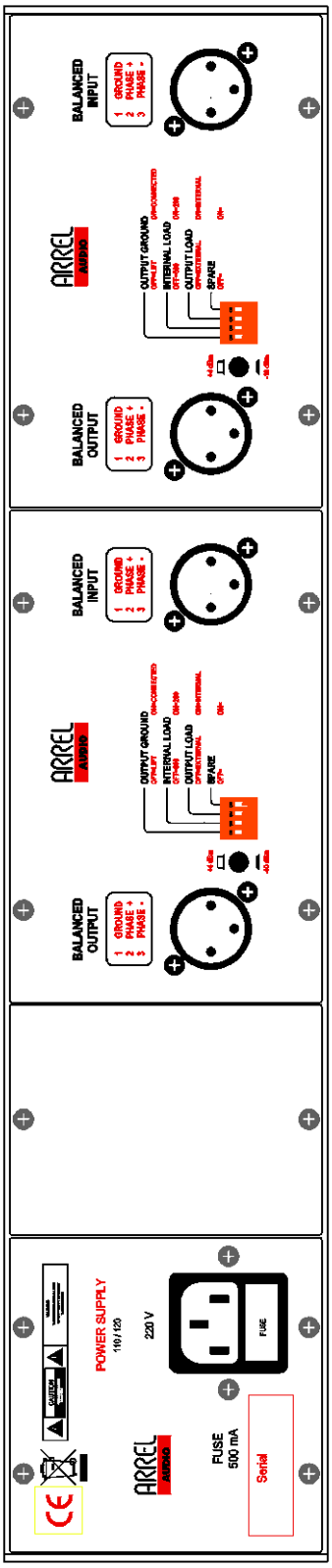


FIG.8 EL-112 Back Panel

TECHNICAL SPECIFICATIONS

ELITE SERIES MODULAR CABINET SPECIFICATION	
MECHANICAL SPECIFICATION	
Construction	19" 2U rack mount metal box
Number of Modules	The ELITE Series unit can be factory assembled with one or two ELITE Series modules
Dimensions	W 483 mm / 19", H 88,90 mm/1.75" (1 RU), D 225 mm / 8.86"
Weight	2.8 kg
POWER SUPPLY	
Power Supply	Linear Regulator (Toroidal Transformer)
Operating Voltage	220V 50 Hz / 110V 60 Hz on request 110 V
Power Consumption	20 W
Rear Panel AC mains	IEC C13 16 A connector, AC mains cord with IEC Schuko 16A
Output	± 24 VDC 300 mA, 48 VDC 25 mA
Power switch	Front panel backlighted switch

EL-112 AUDIO SPECIFICATIONS	
Number of Channels:	2
Input	Electronically balanced, Impedance > 10 KΩ
Channel Gain	Range: -10 to +10 dB
Output	Electronically balanced Output Impedance 100 Ω, (minimum external load 600Ω)
Output Level	Level +4dBu, Max +28 dBu
Bandwidth	5 - 200.000 Hz -1dB, perfect square wave up to 20 KHz
Distortion + Noise	<0.005% (typical 0.001 %)
Filters	LO Frequency Range 20-200 Hz MID1 Frequency Range: 100-1000 Hz MID2 Frequency Range: 500-5000 Hz HI Frequency Range: 2000-20000 Hz The filters are bell shaped
Front Panel Controls	Left/Right level POTs +10/-10dBu True-Bypass button with LED Power-On Switch
Front Panel Equalizer Controls (for each channel)	LO 20-200 Hz MID 1 100-1000 Hz MID 2 500-5000 Hz HI 2000-20000 Hz Emphasis/De-Emphasis switch (-, off, +) Emphasis/De-Emphasis continuous rotary knob, range 0/+14 dB for each band Q control continuous rotary knob
Front Panel Indicators	For each channel: 1 x red LED (By-Pass) 1 x red LED (Peak Meter) 1 x red LED (De-Emphasis) 1 x green LED (Emphasis)
Rear Panel Line In Connectors	2 x Balanced XLR female
Rear Panel Line- Output Connectors	2 x Balanced XLR male